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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,267	07/13/2001	Victor Chornenky	P894 US	2731

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IP Legal
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EXAMINER

GEMMELL, ELIZABETH M

ART UNIT PAPER NUMBER

2882

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/905,267

Applicant(s)

CHORNENKY, VICTOR

Examiner

Beth Gemmell

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-14 and 16-20 is/are rejected.
- 7) ☒ Claim(s) 6 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of amendments filed 22 January 2003.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5, 7-14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chorenky et al (US Patent 6,069,938) in view of Goddu et al. (US Patent 6,201,852).

Re claims 1, 10 and 20: Chornenky et al. discloses a system for emitting x-rays comprising an x-ray emitter (figure 1, 101); a controller operably connected to the x-ray emitter (figure 1, 109); a current sensor operably connected to the controller (figure 1, 111); a voltage sensor operably connected to the controller (figure 1, 115); wherein the controller determines an actual dose rate based on a received current sensor signal and adjusts a supplied voltage to allow the actual dose rate to match a predetermined dose rate to match a predetermined dose rate (column 7, lines 37+).

Chornenky et al. fails to explicitly disclose the use of a received voltage sensor signal, in combination with a current sensor signal, to adjust the supplied voltage to allow the actual dose rate to match a predetermined dose rate. However, one of ordinary skill in the art at the time the invention was made can clearly see a direct feedback connection from both the current and voltage sensor signals to the programmable control block (figure 1). Therefore it would have been obvious to one of

ordinary skill in the art to use both the current and voltage sensor signals within the control block since both are directly connected to the control block because the two different signals can give more information, which can then be used to produce a more accurate dosage and the more accurate the dosage, the more control of the procedure the operator has and in turn the patient is not subjected to extraneous or negligible radiation.

Chornenky et al. also fails to teach the concept of increasing and/or decreasing the applied voltage to match the predetermined dose rate.

Goddu et al. teaches the use of a sensor, coupled to a control means, to monitor the amount of radiation received by the subject by measuring the dose rate in real-time. The amount of radiation introduced to the subject is measured by the sensor and compared to a preset pattern. Should the real-time measurement not match the preset pattern the control means modifies the amount of radiation-blocking liquid in the container (column 12, lines 43+).

Goddu et al. discloses increasing the amount of liquid when the dose rate increases, wherein the subject is exposed to less radiation and decreases the liquid when the dose rate decreases, exposing the subject to more radiation. Therefore, one of ordinary skill in the art at the time the invention was made would have been motivated to combine the system disclosed by Chornenky et al. with that of the concept taught by Goddu et al. because it monitors and corrects the radiation received by the patient more closely which improves the accuracy of the radiation, thereby preventing over or under exposure to the patient.

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Re claim 2: Chornenky et al. discloses a current sensor to measure the current through the x-ray emitter a plurality of times per second (column 4, lines 23+).

Re claims 3 and 11: Chornenky et al. fails to explicitly disclose a voltage sensor which measures the voltage through the x-ray emitter a plurality of times per second.

One of ordinary skill in the art at the time the invention was made would have motivated to combine the system disclosed by Chornenky et al. with that of a voltage sensor which measures the voltage through the x-ray emitter a plurality of times per second because the feedback loop within the system samples the current a plurality of times per second, the voltage signal sensor is also sampled a plurality of times per second because it is placed in series with the current signal sensor and the control block. An artisan would have been motivated to sample both the current and voltage sensors a plurality of times per second because a more accurate dosage would be produced, which in turn would not subject the patient to extraneous or negligible radiation.

Re claims 4 and 12: Chornenky et al. discloses a controller which adjusts the actual dose rate based on the irradiation depth (column 7, lines 35+).

Re claims 5 and 14: Chornenky et al. discloses that the actual dose rate is calculated a plurality of times per second (column 4, lines 23+).

Re claims 7 and 13: Chornenky et al. discloses a controller that adjusts the actual dose rate by correcting for tissue radiation absorption (column 7, line 6).

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Re claim 8: Chornenky et al. discloses a controller that adjusts the actual dose rate by correcting for an increased target area with an increasing treatment radius (column 7, line 4).

Re claims 9 and 16: Chornenky et al. discloses a current integrator (figure 1, 113) operably connected to the current sensor and the controller to integrate instant current values over time to determine an accumulated charge (column 4, lines 23+).

Re claim 17: Chornenky et al. discloses adjusting the applied voltage comprising stabilizing the actual dose rate (column 3, lines 3+).

Re claim 18: Although Chornenky et al. is silent in regards to selecting the desired dose rate by an operator. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the system disclosed by Chornenky et al. with that of an operator selecting the desired dose rate because the radiation treatment would then be individualized for each individual patient therefore it would not subject the patient to extraneous or negligible radiation.

Re claim 19: Chornenky et al. discloses a computer usable medium storing a program comprising: a computer readable code for determining an actual dose rate based on the measured current and voltage; computer readable code for comparing a desired dose rate to the actual dose rate; computer readable code for adjusting the applied voltage; and computer readable code for matching the actual rate to the desired dose rate (column 6, lines 26+: the basic algorithm within the control components of the apparatus).

Response to Arguments

The examiner agrees Chornenky et al. (US Patent 6,069,938) does not teach increasing and/or decreasing the applied voltage to match the predetermined dose rate. However, Goddu et al. does teach the concept of increasing and/or decreasing the applied voltage to match the predetermined dose rate as discussed above.

Allowable Subject Matter

Claims 6 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims but would be allowable, as set forth in paper #4, if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beth Gemmell whose telephone number is (703) 305-1937. The examiner can normally be reached on Monday-Thursday 6:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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SUPERVISOR
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emg
April 9, 2003